MINERAL RESOURCES

1987 SUMMARY AND HIGHLIGHTS

OUTLOOK FOR 1988

Québec

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1987 SUMMARY AND HIGHLIGHTS

OUTLOOK FOR 1988

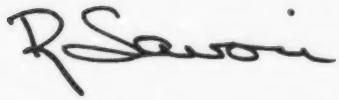
I am pleased to present this first review of the performance of Québec's mineral industry in 1987. The following pages contain a survey of the year's highlights, a detailed summary of each sector of activity and a brief outlook for 1988.

The performance of Québec's mining industry reflected the continued economic growth recorded in industrialized countries. Indeed, the value of shipments grew in all but a few sectors, and the total value of Québec's mineral shipments rose. The metals sector, with gold leading the field, is mainly responsible for this increase. The solid performance of most mineral markets enabled our mine operators to obtain higher prices for their products.

Industry related capital investments also climbed sharply. These expenditures, however, are not expected to continue at the same level, considering the combined effects that the federal financial reform and the October 1987 crash should have on the financing of exploration.

Nevertheless, the outlook is good for this Québec industry, which employs over 21,000 person-years. If prices remain steady, we should expect new operations to begin in 1988.

I am sure you will appreciate this document: it is concise and easy to consult.



Raymond Savoie
Minister responsible for
Mines and for Native Affairs

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OVERVIEW

- Mineral shipments totalled $2.71 billion, up by 24 % over 1986.
- Employment in the mining sector rose nearly 5 %, reaching 21,075 person-years; total wages amounted to $764.9 million.
  - exploration : $466.9 million (+ 69 %);
  - development : $200.9 million (+ 15 %);
  - capital expenditures : $129.9 million (+ 19 %);
  - repairs : $211.8 million (+ 4 %).
- Exploration financing through tax shelters almost doubled, totalling nearly $565 million.

1986 AND 1987 QUÉBEC MINERAL SHIPMENTS

SUBSTANCE	1986 Quantity*	1986 000 $	1987 (preliminary) Quantity*	1987 (preliminary) 000 $
Metallic minerals				
Silver	62 232 kg	15 730	122 497 kg	37 856
Cadmium	44 t	167	90 t	509
Copper	51 622 t	105 412	50 060 t	120 344
Iron ore	13 471 kt	c	15 550 kt	c
Pig iron	c	c	c	c
Molybdenum	355 t	2 389	—	—
Niobium	c	c	c	c
Gold	28 342 kg	465 286	30 547 kg	576 739
Selenium	115 t	1 977	98 t	1 801
Tellurium	5 t	168	11 t	319
Zinc	37 126 t	45 108	82 650 t	105 296
Subtotal		1 207 282		1 553 614
Industrial minerals				
Asbestos	541 kt	178 036	510 kt	214 213
Dolomite	c	c	c	c
Natural gas	c	c	c	c
Graphite	c	c	c	c
Ilmenite	c	c	c	c
Mica	c	c	c	c
Salt	c	c	c	c
Silica	837 kt	17 025	834 kt	17 863
Sulphur	42 kt	7 492	50 kt	8 100
Talc	c	3 191	c	3 650
Titanium (slag)	c	c	c	c
Peat Moss	7 770 033 bags**	30 059	7 376 000 bags**	26 439
Subtotal		c		610 222
Construction materials				
Lime	c	c	c	c
Cement	3 249 kt	190 289	3 731 kt	227 340
Stone	36 066 kt	172 194	40 485 kt	220 172
Clay products				
bricks	143 492 626 units	26 809	c	c
others	—	2 812	—	3 280
Sand and gravel	29 607 kt	61 927	29 177 kt	62 642
Subtotal		c		550 078
TOTAL		**2 192 690**		**2 713 394**

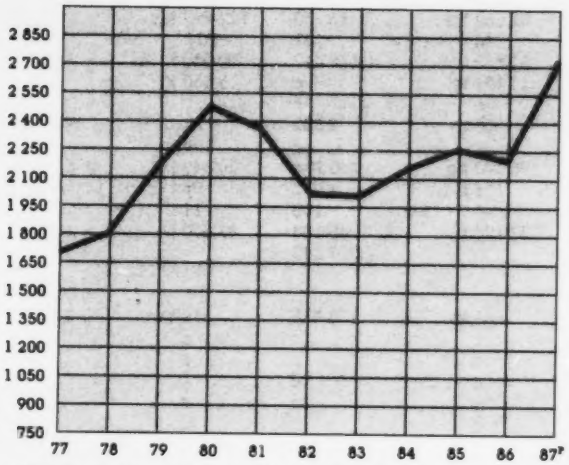
* **Measures are expressed in International System (SI) units.**
** **170 dm^3 bags**
c: Confidential
Source: Service de la statistique, MER (Mines).

NOTE

Values are expressed in current Canadian dollars ($). The term "shipment" is synonymous to quantities sold, shipped or used; it does not necessarily mean quantities extracted or processed during the year in question. Shipment-related figures for 1987 are preliminary, while those for 1986 are final. Comparisons between these data are thus merely indicative.

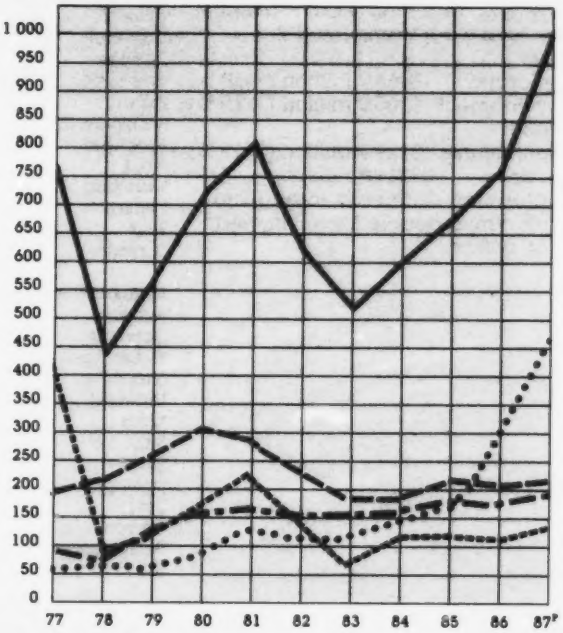
1987 HIGHLIGHTS

1977-1987 QUÉBEC MINERAL SHIPMENTS
(millions of $)



Source : Service de la statistique, MER (Mines)

1977-1987 INVESTMENT IN THE MINERAL SECTOR
(millions of $)



Source : Service de la statistique, MER (Mines)

- Total investment
- Capital expenditures
- Repairs
- Development
- Exploration

PRECIOUS METALS

● Three new gold quartz mines began production during the year: the S-3 mine of Camchib Mines Inc. in early 1987, the Joe Mann mine of Meston Lake Resources Inc. in April, and the Dorval mine of Mine Dorval limitee in September.

● After a nine-month stoppage, the mine and mill of Bachelor Lake Gold Mines Inc. resumed normal production activities in September.

● Lac Minerals Ltd. completed expansion work on its mill at the Doyon mine (50 % of which is held by Cambior inc.), whose capacity now reaches 3,000 tonnes per day.

● Shareholders of Dome Mines Limited, Placer Development Limited and Campbell Red Lake Mines Limited approved the merger of their companies. The name of the new company is Placer Dome Inc. In Quebec, this agreement affects the activities of the Sigma and Kiena mines as well as the Eastmain exploration project.

● The merger of Cambior inc. with two other mining corporations has led to the creation of Rouanda Mines Inc. (formerly Aiguebelle Resources Inc.) and Camsul inc. (Sullivan Mines Inc.), two wholly-owned subsidiaries of Cambior inc.

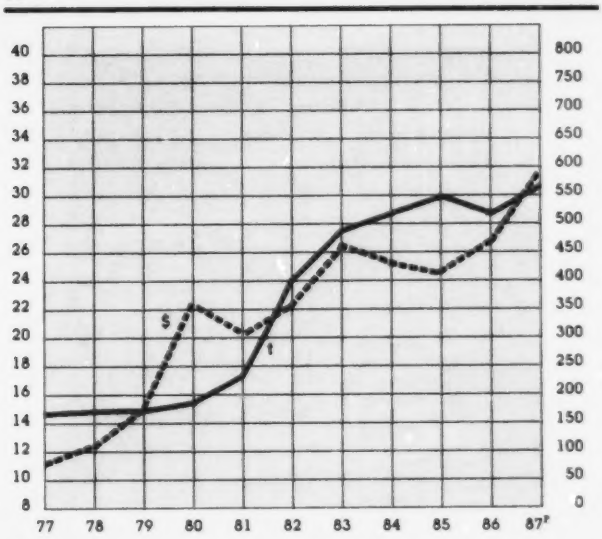
● Shareholders of Meston Lake Resources Inc. and Campbell Resources Inc. have approved a project to merge the former with a wholly-owned subsidiary of the latter.

● Noranda Inc. filed suit against Agnico Eagle Mines Limited and its subsidiary, Mentor Exploration and Development Co. Ltd., following the sale of shares of Dumagami Mines Limited in 1986.

● To finance and complete its exploration and development projects, Louvem Mining Company Inc. created a new wholly-owned subsidiary: Monicor Explorations Inc.

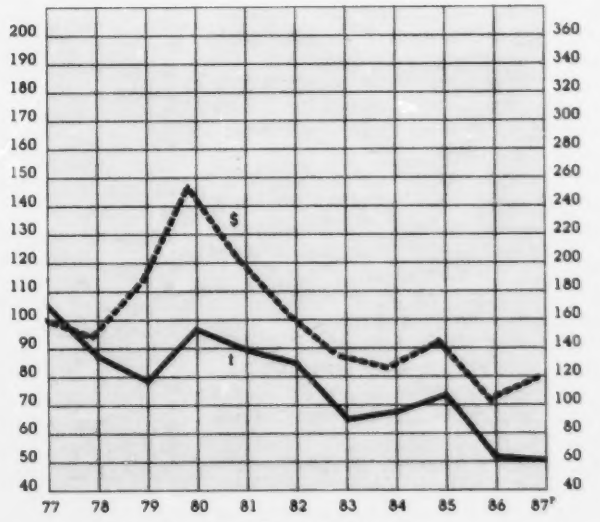
● Noranda Inc., Cambior inc. and Nova-Cogesco Resources Inc. combined the two Ribago and Waite-Beauchastel properties to undertake a single exploration program of the Silidor deposit. The respective shares of the corporations in the project are now 55 %, 25 % and 20 %.

1977-1987 GOLD SHIPMENTS



Source: Service de la statistique, MER (Mines)

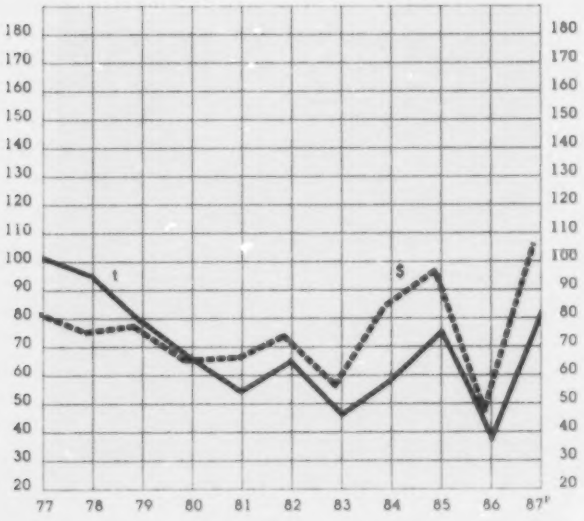
1977-1987 COPPER SHIPMENTS



Source: Service de la statistique, MER (Mines)

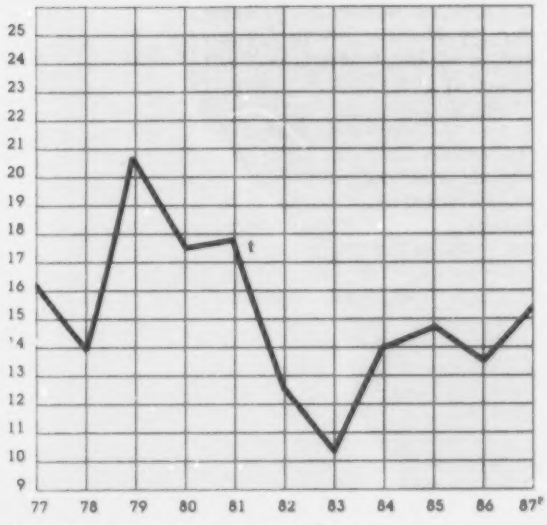
1987 HIGHLIGHTS

1977-1987 ZINC SHIPMENTS
(thousands of t) (millions of $)



Source: Service de la statistique, MER (Mines)

1977-1987 IRON ORE SHIPMENTS
(millions of t)



Source: Service de la statistique, MER (Mines)

BASE METALS

● The governments of Canada and Quebec signed an agreement that provides for a joint loan of $83.2 million to Noranda Inc. to build a $125 million sulfuric acid plant and thus allow this company to reduce by half the sulphur dioxide emissions from its Rouyn-Noranda copper smelter.

● In Rouyn-Noranda, workers at the Horne smelter of Noranda Inc. went back to work on February 24, 1987, after a strike that lasted nearly four months. This was the most severe labor dispute to hit the company since 1953.

● Corporation Falconbridge Copper changed its name to Minnova Inc. after Kerr Addison Mines Limited acquired the controlling interest in it (in August 1986), held previously by Falconbridge Limited.

● In June 1987, following a fire that had occurred a few months earlier, Noranda Inc. announced the shutdown of its two Murdochville mines. The ministere de la Main-d'oeuvre et de la Securite du revenu earmarked $625,000 toward the relocation of the 400 workers that were laid off.

● In June, after a strike that lasted over a month, the employees of Northgate Mines Inc. of Chibougamau accepted the company's offer and went back to work.

● The Mobrun polymetallic mine run by Audrey Resources Inc. officially began production in June. Investments of $13 million led to the opening of the mine, which employs 95 people and produces 1,000 t/d.

● In June, workers of the Opemiska division of Minnova Inc. went on a strike that lasted about 20 days.

● Minnova Inc. completed development work related to the Ansil project. The reserves are evaluated at 2.1 million tonnes yielding 7% of copper, 5% of zinc, 24 grams of silver and 1.7 grams of gold per tonne.

● In December, the Australian Western Mining Corp. Holdings concluded with Northgate Exploration Limited an agreement under which it acquired Northgate Mines Inc. of Chibougamau for $160 million.

● Alcan Smelters and Chemicals Ltd. (Secal) announced that it will soon build a gallium production plant at its Jonquiere complex. The new installations should begin operations before the end of 1988.

● In June, Secal inaugurated in Jonquiere a new aluminum floride plant with a capacity of 40,000 tonnes per year. It is the largest plant of its kind in the western world.

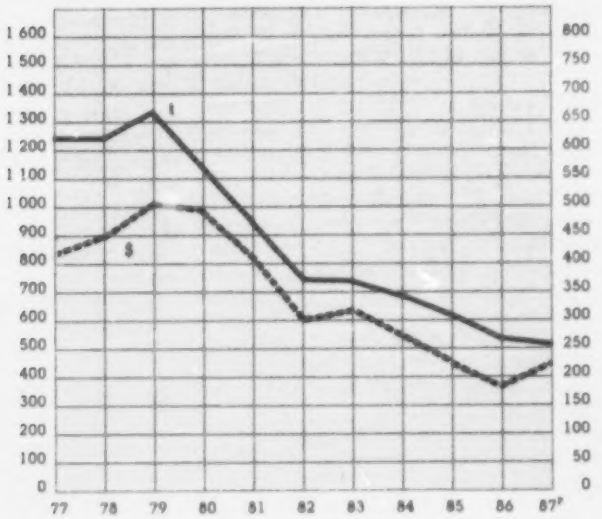
● In June, a fire destroyed 15% of the installations of Reynolds Aluminium Company of Canada Ltd. at Cap-de-la-Madeleine.

FERROUS METALS

- The 1,200 employees of the Iron Ore Company of Canada in Labrador City went out on strike for one month last March. For their part, the 450 workers of Wabush Mines in Labrador went on strike for two months.
- The Quebec Cartier Mining Company completed the construction of the infrastructures necessary for mining the Mont Survie deposit at Mont-Wright. The governments of Canada and Quebec contribued 20 % of the $21.8 million necessary to carry out this project.
- The IOC laid off 226 employees in the last four months of the year.
- By expanding its capacity to produce titanium slag, the Tracy smelter of QIT-Fer et Titane Inc. will be able to increase its capacity for the production of pig iron by 20 %. When work is completed, production will reach 870,000 tonnes per year.
- At the end of May, Niobec Inc. permanently laid off about 20 employees. Three months later, it temporarily laid off 75 of its 170 workers.

1977-1987 ASBESTOS SHIPMENTS

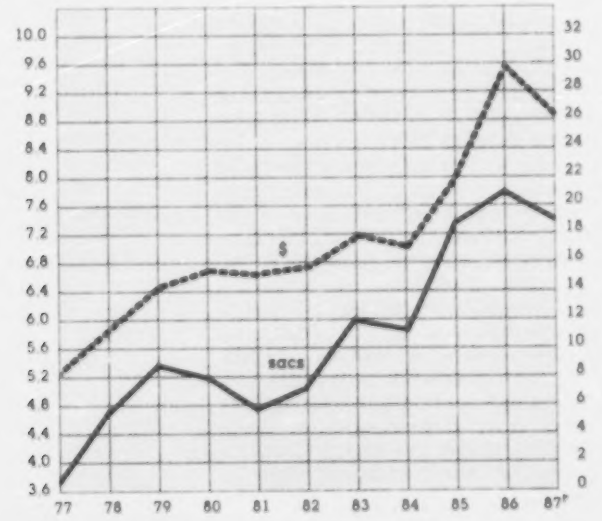
(millions of t) (millions of $)



Source: Service de la statistique, MER (Mines)

1977-1987 PEAT SHIPMENTS

(millions of 170 dm³ bags) (millions of $)



Source: Service de la statistique, MER (Mines)

INDUSTRIAL MINERALS

● QIT-Fer et Titane Inc. (QIT) expanded its Tracy smelter, whose annual capacity will increase from 850,000 to 1,025,000 tonnes of titanium slag. The work, which will be completed in the fall of 1988, will cost about $130 million.

● QIT began developing an ilmenite deposit adjacent to that of Lake Tio (near Havre-Saint-Pierre) that will begin operating in 1990. Ilmenite reserves should thus increase by approximately 18 million tonnes.

● QIT has undertaken to develop an ilmenite deposit in Madagascar, where 600,000 tonnes of ore at 60 % of titanium dioxide could be extracted annually. The ore would be shipped to the Tracy smelter and processed into slag containing more than 90 % of titanium dioxide.

● JM Asbestos Inc. undertook the development of the Jeffrey mine, a project of nearly $75 million. The provincial government granted the company a conditional guarantee equivalent to 85 % of the loss possible on a maximum loan of $50 million. This project would enable to keep the mine operating until 1994.

● LAB Chrysotile Inc., a limited partnership, announced the shutdown of the Bell mine in Thetford Mines. Development work should be completed by the end of December 1987, and the shutdown is expected in March 1988.

● The Asbestos Institute revealed that it committed additional funds totalling $10 million for research and development during the next four years. The federal and provincial governments will provide 80 % of the funds and the asbestos industry 20 %.

● The division of industrial minerals of Falconbridge Limited, Indusmin, continued its investment program at the Saint-Canut installations. It will thus considerably increase the capacity of the stone crushing section.

● The Societe Temisca Silice (1985) began operations at its Saint-Bruno-de-Guigues silica deposit in Abitibi-Temiscamingue. Production is still low.

● Following a two-year interruption, during which it proceeded to modernize its facilities, the Asbury Graphite Quebec Inc., resumed its activities.

● Royex Gold Mining Corporation gained control of Lacana Mining Corporation. Through its subsidiary Suzorite Mica Products Inc., Lacana Mining Corporation owned, since December 1985, the only mica operation in Canada.

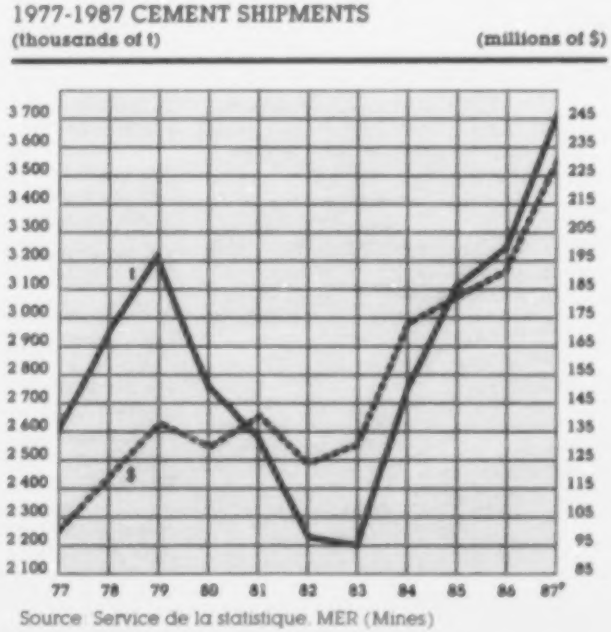
● Lacana Mining Corporation undertook the second phase of its expansion program, evaluated at approximately $3 million. Beginning in mid-1988, this expansion will significantly increase the corporation's capacity to produce various types of mica.

● In September 1987, La Tourbe du St-Laurent ltee, Premier Peat Moss Ltd. and Premier Brands Inc. became wholly-owned subsidiaries of Premier CDN Enterprises Ltd.

● In collaboration with the Centre quebecois de valorisation de la biomasse, Premier Peat Moss Ltd. undertook an important peat moss research and development program, in the Riviere-du-Loup region. Investments totalling $7 million have been earmarked for this project.

● In pursuant to the provincial government's privatization policy, Seleine Mines Inc. and the assets SOQUEM held in this rocksalt mine were put up for sale through public tender in November.

1977-1987 CEMENT SHIPMENTS



Source: Service de la statistique, MER (Mines)

CONSTRUCTION MATERIALS

● The Societe d'exploration miniere Vior inc., in association with Dufresnoy, Societe d'exploration miniere inc., purchased the processing plant owned by Les Granits Frontenac inc. at Lake Drolet (County of Megantic). The plant resumed operations in January 1987.

● Norgranit inc. of Sept-Iles, began mining its Riviere-Pentecote quarry (black coarse-grain anorthosite) in October.

● In September, Miron inc. shut down its cement plant in the Saint-Michel district. Soon afterwards, the city of Montreal officially took possession of the quarry and of the buildings it had acquired in 1984 for $47 million.

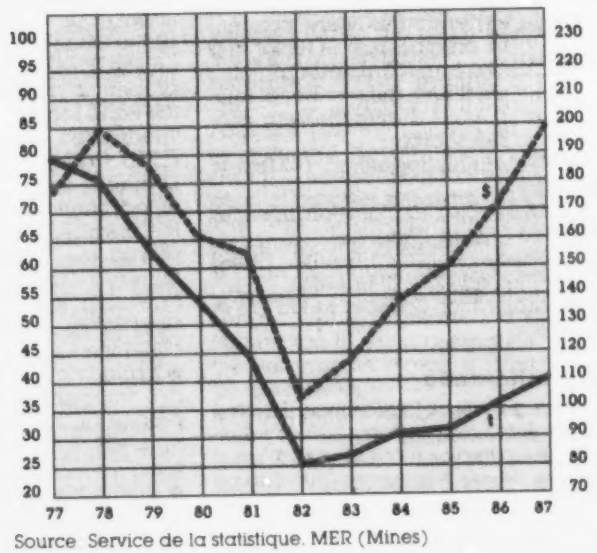
● Miron inc. expects to invest $80 million for the construction of a cement plant and the development of a quarry in the province of Quebec. The three prospective sites are those of Grondines, Joliette and Neuville.

● In 1987, Columbia Granit inc. pursued the study of the wire sawing process on the quarry site. This process is already in use in Europe to cut marble, a stone that is not as hard as granite.

● Beton Bolduc (1982) inc. of Sainte-Marie-de-Beauce opened its new cement-tile plant. The expansion of this company required investments of $3.25 million spread over five years.

● The American Senate refused to be pressured by the cement lobby, which demanded that limitations be imposed on Canadian cement imports, and the Canadian Government ceased to give preferential treatment to Canadian cement companies.

1977-1987 STONE SHIPMENTS



Source: Service de la statistique, MER (Mines)

1987 HIGHLIGHTS

EXPLORATION

● Exploration expenditures rose by 69 % to reach a total of $466.9 million.
● These expenditures were concentrated in the precious metals sector and in the Abitibi-Temiscamingue region.
● Except for claims, the number of mining titles in effect during the year continued to rise sharply:
— 34,475 claims registered (53,080 in 1986).
— 1,558 special exploration licences issued (734 in 1986).
— 36,295 development licenses issued or renewed (28,292 in 1986).
— 79 exploration licences issued (73 in 1986).

Rouyn-Noranda

● Drilling by Teck Explorations Limited on the Estrades property held by Golden Group Explorations Inc. (60 %) and Golden Hope Resources Inc. (40 %) made it possible to establish the presence of mineral reserves of 1.24 million tonnes yielding 9.58 % of zinc, 0.76 % of copper, 1.42 grams of silver and 5.1 grams of gold per tonne.
● In December, the consortium composed of Inco Ltd. and Golden Knight Resources Inc. undertook a new drilling campaign in a zone located between the two deposits of Golden Pond West and Golden Pond Center in the township of Casa Berardi. The cost of that campaign was estimated at $2 million.
● A few discoveries should be mentioned: those of McAdam Resources Inc. in the township of Rouyn (the former McWatters mine), Audrey Resources Inc. and Mines Lyon Lake ltee. (northeast of the former Belleterre mine in the township of Guillet), Yorbeau Resources Inc. in the township of Massicotte and Duration Mines Ltd. in the township of Puiseaux.
● Many companies continued underground exploration work. The following should be mentionned: Minnova inc. (which has an agreement with Syngold Exploration Inc.) on the Deka property (the former Donalda mine in the township of Rouyn), Cambior inc. on the Mouska (township of Bousquet) and Davangus properties as well as Resources Novamin inc. on the Tonawanda property.
● Exploration miniere Normetal inc. pursued the evaluation of the polymetallic Normetmar deposit in the township of Des Meloizes.

Val-d'Or

● Many underground exploration programs were pursued, such as Malartic Hygrade Gold Mines (Canada) Ltd. on the Orion project, Aur Resources Inc. on the First Canadian and Norlartic properties, and NSR Resources Inc. on the Rand Malartic property. Mines d'Or Tundra ltee and Teck Explorations Limited explored the site of the former Lamaque mine, while Goldex Mines Limited continued the Goldex project. Meanwhile, Belmoral Mines Ltd. explored the Wrightbar property, Lac Minerals Ltd., the Swanson property (township of Barraute) and the Perron Gold Mines Ltd., the Soissons property (Sleeping Giant deposit).
● Exploration Sphinx inc. carried out two important projects at its Duvay property in the township of Duverny: the removal of the overburden, and sampling.
● Drilling work carried out in the township of Vezza by Dundee Palliser Resources Inc. led to the discovery of important gold contents.

Chibougamau

● Placer Development Limited (now Placer Dome Inc.) and MSV Resources Inc. drove a ramp on their Eastmain River gold deposit. According to the latest estimates, this deposit should contain 1 million tonnes of ore at 15.3 grams of gold per tonne.
● Flanagan McAdam Resources Inc. and its associates obtained very promising gold crosscuts on two properties situated near the former Gwillim mine.
● Northgate Exploration Limited opened new mineralized gold and copper zones under Lake Dore near the Copper Rand mine.

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● The greenstone segment located between Desmaraisville and the Joe Mann mine, was again this year the scene of intense activity. Surface drilling led to the identification of an important extension to the east of the Joe Mann mine mineralization (Meston Lake Resources Inc.). Moreover, Aur Resources Inc. discovered an extension of more than 400 meters of the Bachelor lake mine gold lode on the Hewfran property.
● Falconbridge Limited and Beaufield Resources Inc. intersected very promising gold mineralizations on their Lake Rouleau property located in the township of Urban.

Sept-Îles

● The Labrador trough was the site of intense activity due especially to La Fosse Platinum Group Inc. (seven copper-nickel deposits, among which that of Blue Lake, elements of the platinum group, also in the Lake Retty sector, etc.) and Noranda Exploration Corporation Limited (mineralized gold zones in the Kuujjuaq sector).
● West of Schefferville, the group composed of the Societe d'exploration miniere Vior inc. and the Societe d'exploration miniere Mazarin inc. continued the Scheffor project, carrying out a drilling and prospecting campaign.
● In the Ungava trough, the consortium composed of Falconbridge Limited, Oasis Resources Inc. and Messeguay Mines Inc. pursued its exploration work on the Delta property, which seems to contain certain contents in platinum and palladium.
● On the Basse Côte-Nord, SOQUEM launched a program to find rare earths, whereas Mon-Dor Explorations Inc. continued the evaluation of its silica deposit in Baie-Johan-Beetz.
● On behalf of the Fonds d'exploration miniere du Nouveau-Quebec the Societe d'exploration miniere Mazarin inc. began an exploration program in the Fermont region to evaluate the potential of the region in industrial minerals and base metals as well as to look for gold.

Gaspésie

● Although the agreement between the federal and provincial governments was signed in December 1986, the Financial Assistance Program for Prospecting in the Bas-Saint-Laurent — Gaspesie was officially launched only last June. Nearly $1 million was spent during the year.

● Uniquartz Inc. continued to develop its Saint-Vianney silica deposit, which it hopes to bring to production next spring.

Sherbrooke

● Resources Robex inc. announced that it could, by the fall of 1988, begin operations in a barytine deposit in the Upton region. The probable reserves of this deposit are about 840,000 tonnes of ore yielding 42.2 % of barytine.

● Carey-Canada Inc., which delimited a talc deposit with reserves estimated at some 8 million tonnes grading 78 % to 80 %, announced that it wished to obtain additional information on the deposit before undertaking new discussions concerning its possible sale.

● Chromite and platinoids were the object of many projects, among which are those of Macamic Resources Inc. carried out under an agreement with Gateford Resources Inc. These studies led to the increase of proven and indicated reserves of the former Reed-Belanger mine at nearly one million tonnes grading from 8 % to 9 % of chromite. Exploration Rambo inc. continued work on its Coleraine property, where nickel is also found, and Gateford Resources Inc. did similar work on the former Sterret chrome mine near Asbestos.

● Polymetallic deposits continued to attract attention because of their gold content. We should point out, among others, the joint project of Lac Minerals Ltd. and Valmont Mining Exploration Inc. in relation to the Eustis and Moulton Hill properties, where six former copper mines were located, and the projects of Noranda Exploration Corporation Limited, Finneth Exploration Inc. and Sullivan Mines Inc. regarding copper deposits in the townships of Stratford, Lingwick and Weedon.

GOVERNMENT ACTIVITIES

● Under agreements signed before 1986, nearly $4.8 million was granted to the Selco division of BP Canada Inc. (Selbaie Mines) and the Gaspé Mines division of Noranda Inc. in connection with the Private Investment Acceleration Program.

● The Mineral Exploration Financial Assistance Program entailed but a single installment of $0.9 million. This sum was paid to Camchib Mines Inc. to carry out exploration work on the Henderson property. The new Mining Act (1987 — Chapter 64) was passed on June 1987 by the Quebec National Assembly.

● Under the Canada-Quebec Subsidiary Agreement on Mineral Development 1985-1990, the department spent nearly $11.7 million for the implementation of the following programs: (a) infrastructures for regional development ($1.89 million), (b) the opening-up of the iron industry ($3.05 million), and (c) geo-scientific activities ($6.74 million). This sum is refundable at 50 % by the federal government. Moreover through the technical and economic studies program developed under the same agreement, the MER (Mines) granted $0.4 million to nine firms. It also granted financial assistance totalling $2 million to the Asbestos Institute under both the research and development program ($1 million) and the defense and promotion of asbestos program ($1 million). The federal government will grant equal amounts to these firms.

● From its regular budgets, the MER granted $1.25 million to the Asbestos Institute, while it granted a total of $0.1 million to eight companies under the Programme d'aide a l'embauche de specialistes.

● Among the research projects carried out at the Centre de recherches minerales (CRM), were many mineralogical studies on gold ore. In addition, experts from the CRM diagnosed the operations of four gold processing plants and provided technical assistance to a new company involved in the production of calcium carbide, electrodes and acetylen. They conducted reducibility and bonding test for the direct reduction of iron ore, automated the furnace used in a pelletizing plant, published a user guide for rock bolting and analyzed the results of a survey on mobile mining-equipment requirement in Quebec underground mines.

● In November, the Universite Laval and the ministere de l'Energie et des Ressources (Mines) signed a concertation and cooperation agreement in the area of mineral research.

ECONOMIC SITUATION AND OVERALL OUTPUT

For the fifth consecutive year, production rose in industrial countries in 1987. The devaluation of the American dollar continued, prompting the intervention of the central banks of the seven major industrial countries (United States, Canada, Japan, Great Britain, France, Germany, and Italy). It seems that the major cause of the October crash was the American trade and budget deficits. The trade deficit equals the sum of the German and Japanese trade surpluses. In late December, President Reagan announced the passage of measures aimed at reducing the budget deficit. Moreover, in OECD member countries as a whole, inflation rose slightly, fueled among other things by higher oil prices that prevailed during most of the year. Thanks to the growth of industrial production, unemployment rates fell sharply, especially in North America.

In 1987, Canada had the best economic performance of the major industrialized countries, with a growth rate of 3.7 %. Economic activity was still greater in Quebec, where the growth of the gross domestic product was estimated at 5.2 %. The sharp increase in Quebec is attributable mostly to residential housing constructions: about 70,000 new housing starts. This is an increase of 14 % over 1986. Both non-residential investments and consumer spending increased by about 11 %. Besides, international exports from Quebec seem to be moderately rising.

According to preliminary data, Quebec mineral shipments reached $2.71 billion, up 23.7 % compared to 1986. This increase is due, to a large extent, to the metals sector, which increased by 28.7 %. The major contributors to this increase are gold , pig iron, iron ore and zinc shipments. Except for peat moss and natural gas, the value of industrial minerals and construction material shipments increased.

PRECIOUS METALS

The price of gold rose from $US 391 per ounce at the very end of 1986, to $US 487 in late 1987. The annual average stood at $US 446 per ounce, which corresponds to an increase of 22 % over 1986. The daily fluctuations observed on the markets were caused essentially by the publication of American economic statistics, particularly those concerning the budget and trade deficits. However, the escalation of hostilities between Iran and Iraq, and the announcement, during the summer, of American intentions to escort Kuwaiti tankers in the Persian Gulf contributed to maintaining a climate of uncertainty on world markets. The three-week strike by some 340,000 black miners in South Africa (affecting half of the country's gold mines) in August did not influence the price of gold in any significant way. Finally, had it not been for the extraordinary increase in the sales of official gold coins that was recorded at the end of the year, the role of gold as a safe investment could have been strongly questioned. Indeed, Black Monday (October 19) did not have any significant effect on the price of gold. It seems, however, that this quasi-stagnation of the price of gold resulted from the massive sale of the precious metal by investors and central banks. As the central banks tried to sustain the American dollar to avert a recession following the loss of confidence in the American economy, investors tried instead to cover the value of losses incurred.

The average cost of silver recorded its first increase since the early 1980s to settle at $US 7 per ounce. This is an increase of 28 % over 1986. Because of its low unit price, silver attracted more small investors than other precious metals. In addition, when Peru announced last April that it would halt its cash sales abroad, the price of silver climbed above $US 11 per ounce. Nevertheless, it fell rapidly to finally stabilize under $US 8 per ounce in the final seven months of the year.

In 1987, the volumes of gold and silver produced in Quebec increased by 8 % and 97 % respectively compared to 1986. Considering the rise of average prices, the value of these productions grew by 24 % and 141 % respectively. The new A-1 polymetallic deposit, exploited since 1986 by Les Mines Selbaie, was responsible for the increase of Quebec's silver output. Moreover, the opening of the Dorval (Mines Dorval limitee), Joe Mann (Meston Lake Resources Inc.), S-3 (Camchib Mines Inc.) and Mobrun (Audrey Resources Inc.) mines largely offset the drop in the production of gold subsequent to the temporary suspension of operations at the Bachelor Lake Gold Mines Inc. deposit. Also, the adoption of new anchoring and extraction techniques at the Bousquet mine (Lac Minerals Ltd.) and the expansion of the mill at the Doyon mine (Lac Minerals Ltd. and Cambior inc.) increased Quebec's gold output.

Several exploration and development projects continued during the year. Among the most important are the Bousquet 2 project (Lac Minerals Ltd.), which will require investments totalling $60 million over a three-year period; the Silidor project for which Noranda Inc., Cambior inc. and Nova-Cogesco Resources Inc. should spend $22 million over two years; the Dumagami project (Dumagami Mines Limited) which, following investments of more than $32 million should begin operating in the summer of 1988; and the Golden Pond East project (Inco Ltd. and Golden Knight Resources Inc.) for which investments of close to $75 million will be necessary before the beginning of production, which is expected for late 1988. In 1987, some corporations responsible for exploration and development projects announced that they might soon begin production: Perron Gold Mines Ltd., Rouyn Mining Resources Inc. (Francoeur), Malartic Hygrade Gold Mines (Canada) Ltd. (Orion project), Aur Resources Inc. (First Canadian) and Yorbeau Resources Inc. (Astoria).

Finally, it should be noted that special efforts were made in 1987 in the search for metals of the platinum group, particularly in the Labrador and Ungava troughs. The Delta project conducted by Oasis Resources Inc. and Falconbridge Ltd. in Ungava and the one conducted by La Fosse Platinum Group Inc. in the Schefferville region should also be mentioned.

BASE METALS

Copper

The world copper market was badly out of kilter in 1987. Demand exceeded supply, which could not be adjusted rapidly enough to meet consumer needs. This situation brought about a sharp decline in stocks and a shortage of copper. The result was surging prices, especially in the last quarter.

In market economy countries, consumption of refined copper reached 8.1 million tonnes in 1987, an increase of 5.1 % over 1986. Demand was sustained

throughout the year but is was particularly strong in the last quarter. The countries most responsible for this situation were the United States, Canada, Europe (West Germany, France and Italy), Japan and Brazil. On the one hand, the Japanese government abolished the ceiling it had imposed on copper imports (April 1, 1987), and on the other hand, the construction sector, especially active in industrialized countries, stimulated demand.

The production of refined copper in market economy countries rose to 7.6 million tonnes in 1987, or almost as much as in 1986. A pronounced imbalance was thus created between supply and demand. Various obstacles prevented major producers to respond quickly to the different signals of the market, and, consequently, supply was somewhat rigid. In Canada, Noranda Inc. was hit by a strike in January and February; it faced technical problems at its Horne smelter (Noranda) in the fall, and a fire crippled its Murdochville mine in April. Chili and the United States both faced technical difficulties (Chuquicamata of Codelco in Chili and Kennecott in the United States) and a plant shutdown (Douglas smelter of Phelps Dodge in the United States) which caused even their best customers to suffer supply delays.

Because of the political instability prevailing in Central Africa, Zaire and Zambia met with some difficulty in shipping their copper production. The political situation forced them to detour through South Africa, a maneuver that caused two- to three-month delays in delivery. Peru, for its part, was beset by a number of strikes in its copper mines late in the year. In addition, OK Tedi Mine in Papua-New Guinea, had to interrupt production for two months because of power supply and water level problems. Briefly, producers encountered difficulties in ore extraction and processing (smelter), as well as in shipping. Lastly, supplies shrunk even more when China had to start purchasing copper because of its depleting stocks; it had not traded on copper markets for six months.

Given the imbalance between supply and demand, refined-copper inventories on world markets felt a downward pressure. In late December, it was estimated that remaining stocks were at a lower level than the volume actually consumed in a month. This significant reduction of stocks is confirmed by transactions on the commodity exchanges and futures markets. Indeed, two indicators reveal the weakness of refined copper world stocks: the level of stocks at both the London Metal Exchange (LME) and the New York Commodity Exchange (Comex), currently at its lowest since 1974, and the pronounced nervousness on futures markets.

The lagging of supply behind demand and low inventories brought about an important price hike in 1987. The prices of some American producers stood, on the average, at SUS 0.81 per pound in 1987 compared to SUS 0.647 per pound in 1986. This 25 % increase is all the more significant since it occurred in the second quarter and particularly during the last quarter. In December, the average price stood at SUS 1.32 per pound and on December 31, the closing price posted SUS 1.45 per pound. The price of copper more than doubled in six months.

According to preliminary data, Quebec's copper production was relatively stable in 1987, with 50,060 tonnes, a drop of 3 % compared to 1986. Noranda Inc. had to cease operations in Murdochville after a fire destroyed its underground installations on April 1. In January 1988, no decision had yet been taken on the mine's future. However, encouraged by the price of copper, Noranda Inc. is considering reopening the mine in 1988. It should also be noted that there were two work stoppages lasting about one month at the Opemiska division of Minnova inc. in Chapais and at the installations of Northgate Mines Inc. in Chibougamau. These disruptions in production were offset by the beginning of operations at the Mobrun deposit, north of Rouyn-Noranda.

Zinc

In market economy countries, consumption of refined zinc reached a level of 5 million tonnes, or a total slightly higher than that of 1986, a record year that topped at 4.92 million tonnes. It is the newly industrialized countries which are mainly responsible for this increase in consumption.

Zinc refining in market economies totalled 5 million tonnes in 1987, compared to 4.86 million tonnes in 1986. This increase reflects the expansion of production capacities, notably in South Korea, Brazil and Europe. The rise occurred despite a decline in Canadian production, resulting from a four-month strike at the Cominco refinery (the largest installation of its kind in the world) in Trail, British Columbia, and from production problems at the refineries of Kidd Creek in Ontario and of Hudson Bay in Manitoba.

Zinc mining rose by 1 %, reaching approximately 5.2 million tonnes. This increase is due to higher output by Canadian mines. The problem of the world's overcapacity to produce refined zinc was not resolved in 1987. For the second time since 1983, the major European producer-countries were not able to come to an understanding to reduce production and rationalize this industry on their continent. They will thus be forced to take individual action. In this context, Preussag of West Germany announced its intention to shut down its refinery in Harlingerode in 1988. However, the resulting reduction (70,000 tonnes per year) would not suffice to completely absorb the world's surplus production capacity, which is increasing, notably in newly industrialized countries such as Brazil, South Korea and India.

In early January, the commercial stocks of refined zinc stood at merely 613,000 tonnes (about six weeks of consumption). As production and consumption were about even in 1987, these stocks represented no more than five weeks of supply at the end of the year, a level that is considered low.

Refined-zinc prices fell in the first quarter, then rose to end the year at a satisfactory level for producers. This situation is explained primarily by the fact that this sector was disrupted by strikes and production problems that prevented the creation of a surplus. In Europe, purchases by the People's Republic of China absorbed all metal surpluses until the end of 1987. From March to December, prices posted by American producers rose from SUS 0.377 to SUS 0.433 per pound. For the overall year, the average price of American producers was estimated at SUS 0.42 per pound, compared to SUS 0.38 in 1986.

According to preliminary data, zinc shipments from Quebec reached a high of 82,650 tonnes in 1987, up 122 % over 1986 (37,126 tonnes) and 9 % over 1985 (75,812 tonnes). The shutdown of the Gallen and Corbet mines explains the low output of 1986, while the opening of

zone A-1 of Mines Selbaie at the end of the same year explains the increase in 1987. It should be noted that the 1987 production is the most important since 1978. Exploration and development carried on in the following deposits: Estrades (Teck Corporation, Golden Hope Resources Inc and Golden Group Explorations Inc.), Isle-Dieu-Matagami (Noranda Inc.) and Normetmar (Normetal Exploration Inc.).

Aluminum

In 1987, the aluminum world market was slightly unbalanced. Although supply increased over 1986, it was unable to meet demand, which remained strong. Stocks, which stood at a relatively modest level early in the year, continued to decline slowly throughout the year. Consequently, prices rose sharply.

In market economy countries, aluminum demand rose by about 1 % in 1987 compared to 1986. The countries that were chiefly responsible for this increase are the United States, Japan, West Germany, Brazil and, to a lesser extent, France and Canada. This situation is explained mainly by the strong industrial performance, especially of the United States and Japan. The prudent attitude of aluminum traders and users — who stockpiled reserves in the event of possible work stoppages, especially at the Quebec installations of Alcan Smelters and Chemicals Ltd. (Secal) — can also be advanced as a second explanation.

The aluminum output in market economy countries increased by 5 % in 1987 compared to 1986. This increase was caused essentially by Norway, Quebec, Brazil, Australia and the United States. The Americans, whose output was slowed by strikes in 1986, raised their level of production almost to full capacity, encouraged by strong demand, higher prices and the decline of the dollar. Although production picked up vigorously, it was not sufficient to meet demand, which did not let up in 1987. Even if the gap between supply and demand remained small, the slow reaction and adjustment of producers created uncertainty, which reflected on stocks and prices.

World aluminum stocks held by producers, as well as by the London Metal Exchange (LME) and the New York Commodity Exchange (COMEX), declined continuously in the first quarter, rose slightly in August, then fluctuated until the end of the year. They remained relatively low throughout the year and, at the end of 1987, were assessed at less than six weeks of consumption. Last year, the average price of an ingot at the LME was SUS 0.71 compared to SUS 0.522 in 1986, an increase of 36 %. The average monthly price continued to climb from the beginning of the year until August (from SUS 0.531 in January to SUS 0.821 in August). From September to December, it fluctuated wildly just as stocks did. The rapid rise of prices, which characterized the first quarter, reflected the start of a return to a somewhat balanced market, but the fluctuations of the second quarter indicated real uneasiness.

According to preliminary data, the Quebec production of primary aluminum, reached 1.27 million tonnes in 1987, an increase of 17.6 % over 1986. This is due mainly to Aluminerie de Becancour Inc. (ABI) whose production rose from 58,000 tonnes in 1986 to 241,000 tonnes in 1987. This operation ran at full capacity beginning in mid-February. Moreover, production at Reynolds Aluminum Company of Canada Ltd. increased by 12 % over 1986, whereas production at Secal declined by 2.2 % on account of the work stoppage that began on October 31 at its Shawinigan plant.

In May, Secal announced the construction of an aluminum smelter with an annual capacity of 200,000 tonnes at Laterriere, near Chicoutimi. The project will be carried out in many phases over a period of five to seven years. The plant will replace the now obsolete installations of the Jonquiere complex. The first phase will span 30 months. The installations then built will have an output of 50,000 tonnes. Construction work will begin in May 1988.

In late July, the American corporation Reynolds Metals Co., parent company of Canadian Reynolds Metals Company purchased a 25.05 % interest in Aluminerie de Becancour Inc., joining with Pechiney, Alumax Inc. and the SGF Group. The transaction was concluded at the cost of SUS 230 million ($CDN 310 million).

FERROUS METALS

In 1987, consumption of iron ore rose slightly over 1986 in industrialized countries. However, production capacity continued to outstrip demand. Steel production hardly increased (barely over 2 %). In the European Economic Community (EEC) and in Japan, it fluctuated wildly throughout the year to post a global result similar to that of last year. It fell during the first two quarters because of the appreciation of currencies, but, stimulated by the resumption of industrial production, it rebounded in the last six months. In the United States, steel production rose by 10 % following the depreciation of the dollar and the resumption of industrial production. Consumption of iron ore increased 5 % (8 % in Canada).

The surplus of iron ore that prevailed on world markets did not, however, exist in all of its forms. There was, in effect, a large surplus of concentrate, the most commercialized form. As well, the prices set by Quebec-Labrador producers and European steelworks slipped 5 % to 9 %, selling at SUS 15.90 per tonne (dry weight) in 1987. In the United States, sintering plants, which use concentrate, reduced their consumption by more than 15 %. Contrarily, demand for pellets was very strong. World suppliers were overwhelmed with orders and nearly depleted their stocks. Blast furnaces increased their pellet consumption by 6 % in the United States and 8 % in Canada. Thus, iron ore stocks fell 10 % in the United States (to about 20 million tonnes) and 30 % in Canada (to nearly 7 million tonnes). In Europe, prices negotiated with Quebec-Labrador producers rose 1.8 % (to SUS 24.30 per tonne, dry weight), whereas those negotiated with other pellet suppliers rose 2.4 % to 7.9 %.

Taking advantage of the high pellet consumption in Europe and in the United States, Quebec Cartier Mining Company (QCM), the sole Quebec producer, shipped 15.6 million tonnes. This increase of 21 % was divided equally between pellets (8 million tonnes) and concentrate (7.6 million tonnes). The production capacity of the pellet plant at Port Cartier rose from 6.5 to 7.8 million tonnes per year, thanks to the addition of a disk. Iron Ore Company of Canada delivered 13.3 million tonnes of iron ore (9.1 of pellets, 3 of concentrate and 1.2 of ungraded ore), while Wabush Mines shipped 5.4 million tonnes of pellets.

In March, the negotiation of new collective agreements led to two work stoppages at installations of Quebec-Labrador iron ore producers. The 1,200

workers of the IOC in Labrador City went on strike for one month, and the 450 metalworkers of Wabush Mines in Labrador stayed out on strike for two months. The QCM installations were the only ones that operated without interruptions.

In the spring, QCM completed the construction of the infrastructures necessary to launch production at the "B" deposit (officially named Mont Survie) at Mont-Wright. The project, which cost $21.8 million, was subsidized at 20 % of total requirements by the governments of Canada and Quebec.

Shipments of pig iron increased by half in 1987. The producer, QIT-Fer et Titane Inc. benefited from the opening of its steel mill to absorb a part of the pig iron surpluses that it had accumulated. However, the world market of pig iron suffers from over capacity. Since pig iron is a by-product of titanium slag, these two products strongly depend on one another.

Niobium shipments declined by more than 10 % in 1987. Sustained demand on the American market was unable to offset the losses incurred on the European market. For its part, the Japanese market stagnated.

INDUSTRIAL MINERALS

In 1987, world consumption of asbestos continued to show clear signs of recovery. With the exception of North America, all the regions of the world have maintained or increased their asbestos consumption since 1984. The rise in demand is particularly strong in Asian countries. This situation allowed many asbestos producers to increase their sales and, thereby, improve their financial situation. For example, Canadian mines, except those in Quebec, increased their shipments by 30 % over 1986.

In the United States, the Environmental Protection Agency (EPA) had not yet released its new plan to regulate the use of asbestos. While awaiting the tabling of new studies commissioned by the EPA, the plan to gradually ban asbestos, proposed in January 1986, was withdrawn, because of the weakness of its scientific basis. Research results were presented to the EPA in December 1987, and the new plan of the American agency will not be known before the summer of 1988.

In Quebec, the asbestos industry was strengthened in 1987 in the wake of numerous shutdowns in 1985 and 1986. During the summer of 1987, Carey-Canada Inc. ended the liquidation of stocks at the Tring-Jonction mine, which was shut down in April of 1986. In late October, LAB Chrysotile Inc., a limited partnership, announced the closing of the Bell underground mine (Thetford Mines) for an indefinite period. This shutdown, which will occur in March 1988, is due to operating costs which are higher than in the other mines that belong to the LAB group, and to high inventories of long fibers.

For its part, JM Asbestos Inc. undertook to develop the Jeffery mine located at Asbestos in Estrie. This expansion project, estimated at $75 million, was made possible through the conditional financial assistance granted by the government of Quebec in the form of a guarantee equal to 85 % of the possible loss on a maximum loan of $50 million. The development of the Jeffery mine should prolong operations and maintain the 700 current jobs until 1994. Work should last two years and allow the company to hire about 300 additional workers.

According to preliminary data, Quebec shipments of asbestos fibers reached 510,000 tonnes in 1987, a drop of 6 % compared to 1986. This decline is attributable to the closing of the Carey mine in 1986. The two other Quebec producers increased their sales 6 % by recovering a share of their competitor's market. The value of their shipments was $214.2 million in 1987, up 20 % over 1986. This rise is explained in large part to increased shipments of long fibers. On the whole, the inventories of Quebec producers remained above 100,000 tonnes.

Regarding research and development, the Asbestos Institute's new $10 million program, set up in May 1987, will be implemented within the next four years. The objectives of the program are the reduction of production costs, increased productivity, research on new and safer mining and handling techniques, as well as the development of new and better asbestos products. The governments of Canada and Quebec will each provide $4 million from the budget allocated under the Canada-Quebec Subsidiary Agreement on Mineral Development 1985-1990; member industries of the Institute will contribute $2 million.

Industrial minerals other than asbestos generally benefited from the growth of the North American economy in 1987, particularly from the excellent performance of sectors such as pulp and paper, construction materials and plastics.

Demand for minerals used to make titanium pigment (chiefly rutile and ilmenite) was very strong in 1987, as in the two previous years. In the two major producing regions, Europe and the United States, the production of pigments increased at the rate of 2.5 % per year. Mines therefore operate at full capacity. New installations were set up in Australia, Brazil, Norway, South Africa, Sierra Leone, Madagascar and Canada. The installations of QIT-Fer et Titane inc. operated at full capacity. Sales of slag to the United States rose nearly 10 %.

Unlike silica shipments, which remained steady, those of mica, talc, dolomite and graphite all increased. The performances of mica and talc are explained especially by the efforts Quebec producers made to find new markets in the past few years. These efforts, in addition to investments made in view of developing "top of the line" products and increasing production capacity, made it possible to increase the volume of shipments and rise their value significantly. Thus the volume of shipments rose nearly 10 % and their value jumped some 25 % for mica and 15 % for talc.

The very strong growth of graphite shipments is basically explained by the resumption of production at Asbury Graphite Quebec Inc. after a two-year interruption. Gradually declining since the early 1980s, dolomite shipments rebounded in 1987 to post an increase of over 17 %. They undoubtedly benefited, as did graphite shipments, from the strong performance of industries that use refractory products. Silica shipments remained steady but their value appreciated nearly 5 %.

Peat moss deliveries fell 5 % in 1987 compared to 1986. Early in the year, stocks were too low to meet demand because unfavorable weather conditions contributed to a poor harvest in 1986. Beginning in May 1987, when production recovered significantly, demand did not follow and inventories accumulated.

CONSTRUCTION MATERIALS

In 1987, the value of the construction materials production increased by 15.5 % over 1986. Cement, stone and clay product shipments rose significantly, both in value and volume, while the value of shipments in the sand and gravel sector went up only slightly.

Cement shipments continued their climb to reach 3.73 million tonnes, up 14.8 % over 1986. The value of the shipments jumped $190 million to $227 million. Again this year, this performance is explained by increased exports to the American Northeast and increased demand in the construction sector.

The value of stone shipments rose by 16.6 % and exceeded $200 million. In 1987, 40.5 million tonnes of stone were shipped, an increase of 12.3 % over 1986. Nevertheless, this total remains greatly inferior to the record level of 78 million tonnes in 1977. In effect, after having plunged in 1982, following the end of construction at James Bay, stone shipments rose for the fifth consecutive year in 1987. The construction industry's remarkable performance explains this gradual rise. Granite (a sub-sector), which is used as cut stone, also grew satisfactorily; shipments rose from 94,000 tonnes to 114,000 tonnes. Finally, the strength of the construction industry also benefited to the clay product sector, and brick shipments hit a record high.

The volume of sand and gravel shipments fell 1.5 % and their value rose slightly more than 1 %. Thus, the downward trend begun in 1982 came to a halt in 1987. The absence of large projects and major road-construction work explains the weakness of demand for these two products.

EXPLORATION

Total exploration expenditures increased by 69 % in 1987; they now reach $466.9 million. They represent over 46 % of all the investments of the mineral industry. This growth is due to the increase in the price of metals, particularly gold, and to the unprecedented success of financing through tax shelters. Since the end of 1986, fear concerning the possible passage of less favorable tax measures has created a climate of uncertainty. These same worries prompted exploration companies to increase or hasten their public financing, which contributed to swell the level of investments in 1987.

The importance of off-location exploration increased from 87 % of total exploration expenditures in 1986 to 91 % in 1987. This renewed activity can also be measured by the number of licenses issued by the department during the year: 79 exploration licenses compared to 73 in 1986, 1558 special exploration licenses compared to 734, and 36,295 development licenses compared to 28,292. Moreover, the 54 % drop that affected the number of claims registered is basically due to the fact that no new territory was open to claim staking. The opening of the James Bay territory in April 1986 made it possible to register a record number of claims for that year, that is twice as many as in 1985.

Although the preliminary data by region are not yet available, an increase in exploration expenditures should be expected in the regions located north of the 52nd parallel, especially in the Ungava and Labrador troughs. Estrie (within the limits of the territory where mining rights were revoked in 1982) and throughout the Quebec Northwest. Furthermore, the importance of the precious metals sector, which stood at 85 % in 1986, should remain stable or increase somewhat.

FINANCING AND TAXATION

The year 1987 was marked by an unprecedented volume of financing for exploration, the announcement of important tax changes and a sharp decline of stock market.

Financing

The sums obtained to finance mining exploration through tax shelters grew considerably in 1987 compared to 1986; they rose from $288 million to $565 million. These data do not include the public issues offered by limited partnerships in 1987, since the greater part of the funds thus obtained will be invested after February 1988, nor do they take into account funds invested outside Quebec. The reasons behind this financing boom are the attractiveness of the tax shelter, the increase in gold prices, and the fear of less favorable tax measures (they were actually announced on June 18). In 1987, financing was distributed as follows:

- limited partnerships $512 million (the greater part of these sums was from flow-through shares)
- flow-through shares $52 million
- common shares $154 million ($47 million of which were admissible for the Quebec Stock Savings Plan).

The fall of stock market prices, which was particularly pronounced on October 19, led to a downward correction of the price of many stocks. The price of junior company shares plunged more than 30 % on the average, while major company shares dropped by about 20 %. At the end of the year, most of these stocks had not recovered the losses incurred in October.

Despite this fact, more than 40 junior companies registered at the Montreal Exchange in 1987. For the most part, these companies would perhaps never have been created without readily available financing coming from the flow-through shares plan.

Taxation

In the budget speech delivered on April 30, 1987, the Quebec Minister of Finance introduced favorable tax measures for admissible expenditures incurred for purposes of scientific research and experimental development (R & D). Let us mention, among others, the following measures:

- an increase of the refundable tax credit from 10 % to 20 % on salaries paid for the purpose of R & D (the credit is 40 % for university R & D);
- an additional allowance of 33⅓ % is granted to individuals who finance R & D by means of a limited partnership (the allowance is 66⅔ % for the financing of university R & D);

However, the impact of these measures was considerably reduced by the refusal of Revenue Canada, on June 9, to make the anticipated announcement regarding admissible expenses. In addition, on December 16, the federal Finance Minister announced that, to be admissible, R & D expenses must have been incurred by a company belonging to the taxpayer, that is, that the latter must earn the greater part of his/her revenue from an R & D company. This measure eliminates, for all practical

purposes, the possibility of financing R & D by appealing to individuals who do not pursue an R & D activity as defined by the federal law on taxation.

However, the highlight in the field of taxation for 1987, is undoubtedly the tabling of the tax reform proposal by the Minister of Finance, on June 18. The definitive terms of this reform were set forth in the Ways and Means Resolution on December 16. The main changes, which correspond roughly to what had been proposed on June 18, are the following — unless otherwise indicated, these measures became effective on January 1, 1988:

- the individual marginal tax rate is reduced from 34 % to 29 % (minus the Quebec rebate);
- the general tax rate of corporations will be reduced from 35 % to 28 % as of July 1, 1988;
- the allowance for earned depletion for individuals and corporations alike, drops from 33⅓ % to 16⅔ % on July 1, 1988, and will be cancelled as of January 1, 1990.
- the capital gains exemption is limited to $100,000, and the calculation of admissible gains under this exemption will take into account losses on investments, this including half of the taxpayer's deduction for exploration costs in Canada;
- the inclusion rate of capital gains into taxable income will increase from 50 % to 66⅔ % in 1988, and to 75 % in 1990;
- from now on, the deduction for the costs of issuing shares, including limited partnership shares will be spread over five years;
- the deduction for the depreciation of the mining assets of categories 10 and 28 drops from 30 % to 25 %; however, the additional deduction (up to 100 % of the balance) applicable to the assets of category 28 is maintained;
- for assets acquired after 1989, the deduction for depreciation and the tax credits for investment may be claimed only when the assets are ready to be put into service;
- for assets acquired after 1988, the tax credit rate applicable to the Gaspe Peninsula drops from 20 % to 15 %;
- the buildings used for R & D are no longer admissible as R & D expenditures (deductible at 100 %) nor to the 20 % R & D tax credit;
- where corporations are concerned, the tax credit deduction is limited to 75 % of the taxes they must pay.

The financing of mining exploration will be particularly hard hit by this set of measures, whose impact adds to the negative effect of stock market decline registered in October. That is why the government of Quebec decided to grant persons who do not operate a mine an additional allowance of 33⅓ % for exploration expenditures incurred in Quebec after June 30, 1988 (declaration of the Minister of Finance on December 18). Thus, the provincial government will continue to bear 36 % of exploration costs, whatever the outcome of the exploration.

OUTLOOK FOR 1988

OVERVIEW

In 1988, growth of the world economy should slow down, particularly in North America. The decline of the American dollar should continue as long as the reduction of the budget and trade deficits has not begun to have an effect. In a year of presidential elections, only minor adjustments to this imbalance can be expected. Moreover, the efforts made by the governments of Japan and West Germany (the amount of the trade surpluses of these countries is equal to the American deficit) to increase domestic demand should counterbalance a certain reduction of exports and thus contribute to a slightly stronger growth. Unless OPEC members succeed in renewing their bonds of solidarity, the price of oil will be lower than in 1987. This decline, however, would not be enough to prevent inflation from rising moderately in the United States, and perhaps also in Canada, despite a slowdown in economic activity.

In Canada, the rate of economic growth should fall to approximately 2.2 %, a rate slightly lower than that predicted by many experts for the Quebec economy. A slowdown is inevitable in the construction sector. However, consumption and business investments will continue to grow, but at a rate inferior to that of 1987.

Quebec mineral shipments should remain at their 1987 level, that is about $2.7 billion. A slight increase in the value of metal and industrial mineral shipments should offset a decline in construction material shipments.

PRECIOUS METALS

In 1988, the ounce of gold should command a price somewhat higher than that of 1987 on average. Investment should remain strong during the first quarter, that is, as long as there is no proof that the measures adopted by the United States to reduce their deficit are effective. Afterwards, the price of this precious metal could decline unless some element of uncertainty intensifies on the international scene. The events to look for are, in particular: the conflict between Iran and Iraq, the American presidential election, negotiations between OPEC members, international debt, and especially that of developing countries. The average price of gold should stand at approximately SUS 460. Because of demand on the part of small investors, the price of silver could also rise moderately to settle around SUS 7.50 an ounce.

If this scenario materializes, Quebec's gold production could increase by more than 15 %. The opening of a number of mines (Perron (Perron Gold Mines Ltd.), Francoeur (Rouyn Mining Resources Inc.), Dumagami (Dumagami Mines Limited), Golden Pond East (Inco Ltd and Golden Knight Resources Inc.), Orion (Malartic-Hygrade Gold Mines (Canada) Ltd.), First Canadian (Aur Resources Inc.), Astoria (Yorbeau Resources Inc.)) would largely compensate for the closing of the Yvan Vezina mine (Cambior inc.) scheduled for the summer of 1988. Quebec's silver production should decline, especially because of the 1987 shutdown of the Noranda Inc. mine in Murdochville. However, if the Isle-Dieu — Matagami (Noranda Inc.) and Ansil projects reach the operational phase sooner than expected, during the summer, for example, silver production could be identical to that of 1987 or even higher.

BASE METALS

Copper

Copper consumption will be strong and sustained, at least during the first six months of 1988. There is no sign that American consumer demand will slow down. On the contrary, the order books for copper products are filled for roughly the next six months. However, there are conflicting signs, and some consumers, the Japanese among others, are beginning to postpone their copper purchases.

Prompted by higher prices, copper producers, who had been slow to react to the rise in demand in 1987, will be in a better position to adjust in 1988. Some producers have decided to re-open their refineries in the second quarter, especially in the United States. The gap between supply and demand will therefore narrow considerably. Nevertheless, supply problems will persist in the first quarter, especially for the following reasons: very low levels of inventories; problems experienced by producers to supply their best customers by the end of 1987 (firm contracts); and some shipping delays on the part of producers.

Considering these facts, copper prices should remain high in 1988. The rising curve recorded in December 1987 will not continue for long. Depending on the speed with which producers adjust to demand, most experts believe that the average price, within the next six months, will settle at approximately SUS 1 to SUS 1.10 per pound, to average out at about SUS 0.90 to SUS 0.95 per pound for the year as a whole. This forecast is given for a relatively shifting market, for which available data are far from precise or transparent. To this are added two key elements whose direct impact is difficult to measure on either the short or the long term: the American trade deficit and the performance of the American dollar on world markets in 1988.

Copper shipments from Quebec's ore producers should rise by 10 % to 15 % in 1988 and reach 55,000 tonnes to 60,000 tonnes to recover losses suffered from a strike and technical problems at the Horne smelter. If the Murdochville mine resumes operations, Quebec's production could increase by 10,000 tonnes to 15,000 tonnes.

Zinc

In 1988, refined zinc world consumption should grow by about 100,000 tonnes on account of the growing use of galvanized steel in newly industrialized countries. However, the volume of zinc mined should decline slightly following the closing of mines such as that of Pine Point in the Northwest Territories (Canada). World output of refined zinc, which was affected by labor disputes in 1986 and 1987, should increase moderately by about 2 % to settle at 5.1 million tonnes in 1988. Efforts will have to be made to rationalize production. In effect, as Canadian operations return to normal, and production in Brazil, Peru, South Korea and India grows, this industry will again be plagued by surplus capacity. The shutdown of the Harlingerode refinery, in West Germany, must be accompanied by measures to stabilize and improve the European market. Since inventories are actually quite low and European producers continue their efforts to rationalize their operations, the average prices of zinc should be similar to those of 1987.

Quebec's ore production will be somewhat higher than in 1987, by about 85,000 tonnes. The A-1 deposit of Mines Selbaie will continue to be operated at normal production capacity, and the beginning of mining at the A-2 deposit

should offset the depletion of zone B. Furthermore, production will increase at the Abcourt and Mobrun mines which should reach their nominal production capacity during the year. Finally, the opening of the Isle-Dieu — Matagami mine of Noranda Inc., at the end of 1988, will compensate for the loss of production following the shutdown of the Norita and Lake Matagami mines.

Aluminum

According to observers of the aluminum market, demand will be the determining factor in 1988. Will it be as strong as in 1987? In all economic sectors where aluminum is used, there are no signs of a slowdown, at least for the next six months. Strong demand during the first part of the year and a slight decline in the second quarter should therefore be expected.

Spurred by high prices, producers, who had already raised their level of operation in 1987, should carry on this way. Therefore the efforts of producers to adjust should bear fruit and the market should stabilize in 1988. Stocks should thus climb to a normal level and prices decline somewhat although remaining relatively high. If workers do not strike and smelters are not beset with technical problems, Quebec producers could still increase their level of operation by about 10 % in 1988.

FERROUS METALS

Given the uncertain economic perspectives of industrialized countries, a moderate decline in steel production is expected in 1988. Production should stagnate in the United States, where the weakness of the dollar should counter the slow down of economic growth, and in Japan, where the vitality of the domestic economy will compensate for the strength of the yen. But it should fall in Europe, following an increase in the value of currencies.

The world surplus of iron concentrate, the most traded form of ore, will persist. The first prices Quebec Cartier Mining Company (QCM) negotiated with European steelworks in 1988 were 1.5 % lower than in 1987 (SUS 15.60 per tonne, dry weight). Quebec sales of concentrate to Europe, its chief market, should decline.

Demand for pellets will remain high. World producers will operate at full capacity (7.8 million tonnes per year at QCM). Because of the restructuring of the American steel plants that declared bankruptcy under American law, Quebec sales to the United States will increase. No longer tied to certain mines by exclusive contracts, these companies can freely decide where to purchase iron ore. In Europe, QCM increased its price by 7.5 %, to SUS 26.20 per tonne (dry weight).

Quebec's production of pig iron should stabilize at 800,000 tonnes, 200,000 of which will be used to supply the QIT-Fer et Titane Inc. steel plant.

Considering actual forecasts concerning economic activity, niobium consumption could stagnate or decline in 1988 also.

INDUSTRIAL MINERALS

The recovery of asbestos consumption on a world scale, especially in newly industrialized countries, should continue during the next few years. However, Quebec producers are facing strong competition from Zimbabwe, South Africa, Brazil and Greece.

The world situation and the depletion of the stocks from the mines that were shut down in 1985 and 1986 should prevent Quebec's production from declining in 1988. The drop in production resulting from the closing of the Bell mine, should be offset by increased activity in the other deposits mined by LAB Chrysotile Inc. The value of sales should remain at the present level, since the respective share of long fibers and short fibers should not change.

World production of pigments and titanium ore should rise steadily until the early 1990s. No surplus is expected, though total production capacity will increase. QIT-Fer et Titane Inc. will continue the development work undertaken northwest of its Lake Tio deposit and complete the expansion of its Tracy smelter. The company is expected to maintain production at full capacity.

The slowdown of the North American economy anticipated in 1988 will probably affect the markets of other industrial minerals, particularly those of products consumed in sectors linked to housing construction, especially in Canada, and to the production of durable goods, such as automobiles.

However, since mica and talc producers have additional processing capacities at their disposal, they should continue to increase their shipments. The efforts they have made in the past few years have allowed them to develop new products in demand in sectors of activity with a high growth potential, such as that of plastics. Mica is already widely exported, especially in the United States, and during the coming years, talc should also benefit from the producers' efforts to make inroads on the American market. Since the efforts of mica and talc producers focus basically on "top of the line" products, a significant growth of shipments is to be expected.

The efforts some silica producers have made since the beginning of the decade to develop new markets outside Quebec should at least help counterbalance the reduction of consumption expected on the part of local users. That is why few changes are expected in silica shipments in 1988.

Since dolomite and graphite are used essentially in the manufacturing of refractory products, shipments will depend on the performances of the sectors related to the processing of mineral substances such as cement, steel and non ferrous metals.

CONSTRUCTION MATERIALS

The Commission de la construction du Quebec expects a moderate decline of activity on construction sites in 1988. The number of hours worked should be about 95 million, down by 6 %. This drop is explained chiefly by the decline of housing starts, which should fall from 70,000 to 50,000 in 1988, a drop of 30 %. However, the non-residential building sector should post a strong performance and maintain a level of activity equivalent to that of 1987. Finally, the increase in the value of contracts granted in the second half of 1987 seems to announce growing activity in the road construction and hydroelectric development sectors. However, the completion of a number of water purification projects should contribute to the decline of this other engineering subsector.

Considering these two opposite trends, the sand and gravel sector should not expand significantly in 1988. The stone, clay products and cement sectors should be influenced by the slowdown in the construction industry, and their shipments should fall in 1988. The substantial drop in housing starts could affect especially brick producers. Finally, granite shipments should progress

again this year, considering the sustained interest of builders, who use it as siding. Moreover, two new quarries could begin production in 1988.

EXPLORATION

The sums invested for exploration should drop in 1988 to the level of 1986 ($276.2 million). Indeed, it is expected that the financing of mining exploration will be greatly affected, although gradually, by the measures announced under the federal tax reform. Moreover, the decline of the stock market, and especially the one recorded in October, will undermine the sale of new mining share issues and it will prevent the creation of new funds intended for exploration in 1988. It is unlikely that the increase of the prices of gold and base metals will be sufficient to reverse this trend.

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